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CACs and Doorknobs

Anna Gelpern* and Jeromin Zettelmeyer**

Key Points:

- In response to debt crises, policy makers often feature Collective Action Clauses (CACs) in sovereign bonds among the pillars of international financial architecture. However, the content of official pronouncements about CACs suggests that CACs are more like doorknobs: a process tool with limited impact on the incidence or ultimate outcome of a debt restructuring. We ask whether CACs are welfare improving and, if so, whether they are pillars or doorknobs.
- The history of CACs in corporate debt suggests that CACs can be good, bad or unimportant depending on their vulnerability to abuse and the available alternatives, including bankruptcy and debt exchanges.
- The history of CACs in sovereign bond workouts is recent and thin. Without restructuring data, the empirical literature has focused on the ex-ante (pricing) effects of sovereign CACs. To the extent that CACs leave borrowing costs unchanged or even lower them, they are likely to be welfare improving. But the magnitude of the welfare effects cannot be inferred from these studies.
- Based on the evidence so far, we conjecture that sovereign CACs are like doorknobs: useful, but perhaps not essential. To date, there is no evidence of abuse of the sort observed in U.S. corporate bond restructurings in the 1920 and 1930s. The bulk of pricing studies suggests that any increases in borrowing costs are small. On the other hand, debt exchanges using transactional techniques other than CACs have had a decent track record, suggesting that CACs are not the only way to resolve a debt crisis in the absence of a treaty-based bankruptcy alternative.
- Future empirical work should focus on how CACs perform in debt restructuring rather than on their ex ante effects.

Introduction

Debates about Europe's financial architecture have paid Collective Action Clauses ("CACs") in sovereign bond contracts the sort of attention normally accorded to load-bearing cathedral pillars. CACs allow creditor majorities to reduce or postpone the debtor's payment obligations and bind dissenting minorities.¹ No other debt contract clause comes close to CACs' fame. Treaties and communiques commit to adopt CACs. Newspapers editorialize about CACs. Heads of state speak knowingly of CACs' virtues. At the other

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¹ This is the most common use of the term "CACs" in financial architecture parlance. Apart from majority amendment, the category may include collective enforcement, collective representation, and creditor engagement clauses, among others. Policy, market, and academic focus has been on majority amendment of core financial terms. See e.g., John Taylor, Under Secretary of Treasury for Intl Affairs, Speech at the Institute for Intl Economics Conference: Sovereign Debt Restructuring: A US Perspective (2 April 2002), <www.piie.com/commentary/speeches-papers/sovereign-debt-restructuring-us-perspective> accessed 1 July 2019; Mark Weidemaier and Mitu Gulati, 'A People's History of Collective Action Clauses' (2014) 54 Virginia J of Intl L 1.

extreme, anyone who says “CACs” and “Italy” in the same breath might get accused of preaching Italexit and shattering the postwar peace. As befits high-profile policy initiatives, CACs have inspired a substantial body of theoretical and empirical scholarship, including a large crop of bond pricing studies with dramatically divergent results.

A puzzling picture emerges from all the policy, market, and academic output about CACs. On the one hand, the *fact* that leaders and their ministers repeatedly turn to CACs in response to crises bespeaks CACs’ load-bearing significance. Surely officials would not bother with CACs—to the exclusion of other contract terms—if they did not expect CACs to make a big difference in crisis management. However, if CACs were effective at reducing debt crisis costs, sovereign debtors that adopt CACs might take less care to avoid crises and, once in crisis, might find more appeal in debt restructuring. This may lead investors to charge extra or refuse to lend altogether.

On the other hand, the *contents* of official pronouncements about CACs convey the opposite message. Here CACs are an innocuous process tool, relevant only when the debtor cannot pay and debt restructuring is inevitable. CACs play no role in the debtor’s decisions to reform or to repay. They reduce deadweight losses and might affect distribution among creditors on the margins after the debtor decides to restructure. Under the circumstances, investors could value CACs positively, negatively, or not at all.

The former view positions CACs as a core structural element in the European architecture—if not pillars or walls, at least doors or windows. In the latter, CACs look more like doorknobs. To be sure, doorknobs are both symbolically and functionally important. A rusty antique signifies neglect, or an old-fashioned sensibility. Turning a sleek, well-oiled knob is far preferable to breaking down the door or jumping out of the window. Nonetheless, doorknobs rarely swing decisions to enter, exit, or to invite guests. They might affect the manner of entry and exit, which is no small thing when the house is on fire.

This essay reconsiders the place of CACs in the European and global financial architecture, and the range of possible effects the inclusion of CACs in sovereign debt contracts might have on the probability of default, recovery values, bond prices, and welfare.

Commentators in financial architecture debates invariably describe CACs as a “market-based,” “market-friendly,” or even “market-led” alternative to treaty-based or statutory sovereign bankruptcy.² It is an incomplete description both when it comes to CACs’ market roots and to the range of available alternatives.

Majority amendment clauses appear to have sprung up organically in English corporate debt in the late 19th century. They have surfaced on sovereign debt policy agendas periodically at least since the 1930s, when a League of Nations committee considered both statutory and contractual voting mechanisms to help manage the tide of sovereign defaults.³ In the mid-1990s, CACs in sovereign bonds became part of an evolving set

² See e.g., Paul Bedford and Chris Salmon, ‘Resolving Sovereign Debt Crises: The Market-Based Approach and the Role of the IMF’ [2005] Financial Stability Rev, <www.bankofengland.co.uk/-/media/boe/files/financial-stability-report/2005/june-2005> accessed 1 July 2019; David Sabel, ‘An Introduction to the Euro Area’s Model Collective Action Clause’ in Klaus-Albert Bauer, Andreas Cahn and Patrick S. Kenadjian (eds), *Collective Action Clauses and the Restructuring of Sovereign Debt* (de Gruyter 2013); Alfredo Bardozzetti and Davide Dottori, ‘Collective Action Clauses: How Do They Affect Sovereign Bond Yields?’ (2014) 92 J of Intl Economics 286; Group of Ten, ‘The Resolution of Sovereign Liquidity Crises’ (Group of Ten, A Report to the Ministers and Governors Prepared Under the Auspices of the Deputies, May 1996) <www.bis.org/publ/gten03.htm> accessed 1 July 2019.

³ League of Nations Report of the Committee for the Study of International Loan Contracts, Geneva 1939; W. Mark C. Weidemaier, Mitu Gulati and Anna Gelpern, ‘When Governments Write Contracts: Policy and Expertise in Sovereign Debt Markets’ in Gregoire Mallard and Jerome Sgard (eds), *Contractual Knowledge: One Hundred Years of Legal Experimentation in Global Markets* (Cambridge University Press 2016)

of initiatives under the rubric of international financial architecture—to vigorous opposition from financial market participants, who saw them as an effort to shift crisis costs onto creditors.⁴

Financial industry views on CACs softened as new crises brought more intrusive treaty-based sovereign bankruptcy proposals. Starting in 2003, three waves of increasingly robust CAC reforms spread across sovereign debt markets in quick succession. Each of the three began as policy responses to market shocks: the first, to Argentina’s 2001 default and the bankruptcy proposals that followed, the second, to the Euro area crisis in 2010,⁵ and the third, to successful holdout lawsuits against Argentina and to Greece’s 2012 bond restructuring.

Successive versions of CACs differ in scope and substance, and would be expected to produce different restructuring outcomes. The first wave focused on emerging market borrowers and New York-law sovereign bonds, where by custom, amending payment terms required unanimous creditor consent. Under first-wave CACs, each bond issue is polled separately; in most cases, amendment requires more than 75% supermajority approval. This means that creditors who control more than a quarter of any outstanding bond issue can block its restructuring. The first wave had a limited impact on Europe, where most sovereign debt is governed by the debtor’s own law.⁶

⁴ See, e.g., Barry Eichengreen and Richard Portes, *Crisis? What Crisis? Orderly Workouts for Sovereign Debtors* (Centre for Economic Policy Research, 1995) and Group of Ten, *supra* note 2; for context, see Anna Gelpern and Mitu Gulati, ‘Public Symbol in Private Contract: A Case Study’ (2006) 84 Washington University L Rev 1627. The desire to limit official “bailouts” motivated the earlier interventions. That goal remains elusive. See, e.g., Nouriel Roubini and Brad Setser, *Bailouts or Bail-Ins?: Responding to Financial Crises in Emerging Economies* (Institute for Intl Economics 2004); Independent Evaluation Office of the Int’l Monetary Fund, ‘The IMF and the Crises in Greece, Ireland, and Portugal’ (2016) <<https://ieo.imf.org/~media/IEO/Files/evaluations/completed/07-28-2016-the-imf-and-the-crises-in-greece-ireland-and-portugal/eac-full-report.ashx>> accessed 2 July 2019.

⁵ See Lorenzo Bini Smaghi, ‘Intervention at the ECON Committee of the European Parliament Hearing on Improving the Economic Governance and Stability Framework of the Union, in Particular in the Euro Area’ (European Central Bank, 15 September 2010) <<https://www.ecb.europa.eu/press/key/date/2010/html/sp100915.en.html>> accessed 1 July 2019; Andre Sapir, ‘A European Mechanism for Sovereign Debt Crisis Resolution: A Proposal’ (2010) Bruegel Blueprint No. 10 <http://bruegel.org/wp-content/uploads/imported/publications/101109_BP_as_jpf_jvh_A_European_mechanism_for_sovereign_debt_crisis_resolution_a_proposal.pdf> accessed 1 July 1, 2019; Jan Strupczewski, ‘Finland Proposes CACs as Part of Euro Crisis Resolution’ (Reuters, 28 October 2010) <<https://www.reuters.com/article/eurozone-resolution-proposal/finland-proposes-cacs-as-part-of-euro-crisis-resolution-idUSWEA540120101028>> accessed 1 July 2019; ‘Franco-German Declaration: Statement for the France-Germany-Russia Summit’ (Folketinget EU-Oplysingen, 18 October 2010) <https://www.eu.dk/~media/files/eu/franco_german_declaration.ashx?la=da> accessed 1 July 2019; European Commission, ‘Treaty Establishing the European Stability Mechanism (ESM)’ Press Release D/12/3 (2012) <http://europa.eu/rapid/press-release_DOC-12-3_en.htm>. For context, see Bauer K, ‘The Euro Area’s Collective Action Clause – Some Questions and Answers’ in Klaus-Albert Bauer, Andreas Cahn and Patrick S. Kenadjian (eds), *Collective Action Clauses and the Restructuring of Sovereign Debt* (de Gruyter 2013); Anna Gelpern and Mitu Gulati, ‘The Wonder-Clause’ [2013] 41 J of Comparative Economics 367.

⁶ European governments committed to include CACs in their foreign-law debt beginning in 2004 as part of the G-7 effort to “lead by example” and encourage emerging market governments to adopt CACs. Although some contracts changed, this was not an economically or politically significant event because the affected contracts in most cases stood at (much) less than ten per cent of the government’s debt stock, and because no one considered CAC issuance by rich European countries a good proxy for the emerging market experience. See e.g., Patrick Kenadjian, ‘The Aggregation Clause in Euro Area Government Securities: Game Changer or Flavor of the Month? – Background and the Greek Experience’ in Klaus-Albert Bauer, Andreas Cahn and Patrick S. Kenadjian (eds), *Collective Action Clauses and the Restructuring of Sovereign Debt* (de Gruyter 2013).

The second wave was all about Europe. Member states' commitment to adopt functionally identical CACs was announced in 2010 and later incorporated in the treaty establishing the European Stability Mechanism (ESM). Issuance began in 2013. Euro area CACs apply to foreign and domestic bonds, and use aggregated supermajority voting across multiple bond series combined with a lower 50% threshold for individual series votes. Aspiring free-riders would have to control at least half of an outstanding bond issue.⁷ Euro area CACs also let independent central banks and government pension funds vote their holdings of their own governments' bonds.

The third wave began in 2014 and was initially limited to foreign sovereign bonds. However, in late 2018, European institutions set on a path to include third-wave CACs in all Euro area medium and long-term sovereign debt securities. Unlike their predecessors, third-wave CACs effectively eliminate holdouts. Amendment requires a single 75% vote across multiple bond series; everyone polled is bound if the debtor abides by contractual safeguards.⁸

Industry groups ultimately played an important role in the design and diffusion of all three waves of CACs. Yet none of the three would have happened without sustained intervention by governments in the world's wealthiest countries. Official speeches, working groups, outreach seminars, multilateral work-streams, high-level bilateral meetings, and monitoring exercises launched each new version of CACs, and nurtured to widespread adoption.

It is clear in retrospect that CACs in today's sovereign bonds may be market-ratified and relatively market-friendly, but they are not *of* the market. This blindingly obvious point has important consequences. CACs-as-financial-architecture respond to international public policy—not necessarily debtor or creditor—objectives. The three sets of objectives might coincide perfectly if policy intervention makes up for market failure (creditor coordination) and merely reduces deadweight losses in restructuring. CACs could also turn out to be useful as rhetoric, but functionally unimportant. After all, modern sovereign bond restructurings with *or without* CACs have proceeded more quickly and smoothly than had been expected, thanks in part to new transactional tools adapted from the corporate world.⁹ Barring perfect coincidence and insignificance, contracts with CACs must incorporate tradeoffs to satisfy market objectives. The simplest tradeoff is price, but “in-kind” tradeoffs are just as plausible.¹⁰

⁷ Although Uruguay in 2003 and Argentina in 2005 had included aggregated voting in their restructured bond contracts, they were the rare exceptions to the rule. In 2010, sovereign bonds either had no CACs or had CACs that required each bond series to be polled separately.

In Europe, voting thresholds determine the outcome unless the sovereign debtor can use local law to override contracts after the fact. Whether the ESM treaty permits such an override is not settled. Mark Weidemaier, ‘Restructuring Italian (or Other Euro Area) Debt: Do Euro CACs Constrain or Expand the Options?’ (2 April 2019) < https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3364982 > accessed 16 July 2019; Yannis Manuelides, ‘Using the Local Law Advantage in Today’s Eurozone’ (17 June 2019) < https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3405422 > accessed 1 July 2019.

⁸ If 75% of the polled bond stock supports the restructuring proposal, it becomes binding on all would-be holdouts. If the proposal fails to clear 75%, there is no restructuring. To use this aggregation mechanism under the industry model of the clause, a sovereign debtor must offer the same terms to all affected bondholders. The debtor can still create multiple voting pools, offer different terms to different pools, and sequence the votes as it sees fit, so long as it discloses its plans to the other bondholders.

⁹ Ran Bi, Marcos Chamon and Jeromin Zettelmeyer, ‘The Problem That Wasn’t: Coordination Failures in Sovereign Debt Restructurings’ (2016) 64 IMF Economic Rev 471.

¹⁰ In-kind tradeoffs might be sprinkled throughout the contract, as with new anti-manipulation and information covenants and higher supermajorities to amend non-financial terms. Some tradeoffs may be hidden: in the past, sovereigns have tweaked issuance parameters to mask the expected effect of CACs on their bond prices and bond market liquidity. For instance, Mexico’s first issue with CACs was designed to avoid comparisons with benchmark

In this essay, we take the policy perspective and consider the welfare implications of CACs in light of sovereign and corporate restructuring experience. While majority voting in sovereign debt restructuring has a limited track record,¹¹ its history in corporate restructuring is long, rich, and controversial. Our brief survey of the corporate context in Part I suggests that the welfare effects of majority amendment terms such as CACs are very sensitive to the availability of alternative restructuring technology, including bankruptcy and debt exchanges. Doorknobs are all-important on the only door out of a sealed warehouse; they are probably dispensable on a gazebo. We elaborate on this intuition in a theoretical sketch in Part II, addressing the relationship between bond prices and the welfare effects of CACs.

We find that even if the price of CACs in sovereign bonds were discernible (a point still debated in the literature), it would not necessarily reveal the welfare effects of adopting CACs, although it might narrow the range of possibilities. If CACs are shown to reduce borrowing costs, welfare must increase or at least remain unchanged. Even if it remains unchanged, all the effort that went into promotion and adoption might have been wasted. If welfare increases, it would still be important to know why borrowing costs went down with CACs. Is it because CACs reduce the deadweight losses of default or because they reduce debtor bargaining power? Do lower costs point to a lower probability of debt restructuring, to higher recovery values in its aftermath, or some combination of the two? Are there cases in which investors simply do not worry about debtor moral hazard when pricing debt with CACs?¹²

Empirical studies to help policy makers decide whether CACs are a good idea would have to know (i) whether a given debtor would default opportunistically, (ii) whether using CACs leads to more or less debt relief than other debt restructuring methods, and (iii) whether CACs reduce deadweight losses in a sovereign debt crisis, and by how much. Studies of the ex-post effects of CACs could help answer these questions. There are few such studies, however, in part because there have been few sovereign debt restructurings with CACs.¹³

We proceed as follows. Part I compares the experience with CACs in corporate and sovereign debt. CACs in corporate debt have helped shape sovereign debt contracts and restructuring practice; yet they are hardly mentioned in the sovereign debt literature. The role of contractual voting mechanisms in corporate workouts has changed over time, contingent on the availability and quality of alternative debt restructuring tools—including, but not limited to bankruptcy. Part II puts these and related observations in a stylized theoretical framework. We describe eight ways in which CACs could affect the probability of default, recovery values,

issues that did not have CACs. Some European sovereigns changed interest payment dates to help secondary market liquidity as they transitioned to CACs. Borrowers expressed concern about liquidity because clearing platforms and market participants did not treat bonds with different amendment terms as fungible. Anna Gelpern and Mitu Gulati, ‘Public Symbol in Private Contract: A Case Study’ (2006) 84 *Washington University L Rev* 1627; Anna Gelpern, Mitu Gulati and Jeromin Zettelmeyer, ‘If Boilerplate Could Talk: The Work of Standard Terms in Sovereign Bond Contracts’ [2019] *Law & Social Inquiry*. Meanwhile, restructuring practices evolve with new contract terms and lessons from experience. Ran Bi, Marcos Chamon and Jeromin Zettelmeyer, ‘The Problem That Wasn’t: Coordination Failures in Sovereign Debt Restructurings’ (2016) 64 *IMF Economic Rev* 471. As contracts and market practice adapt over time, the full effect of any given version of CACs may not become apparent for years.

¹¹ Moody’s, ‘The Role of Holdout Creditors and CACs in Sovereign Debt Restructurings’ (Sovereign Defaults Series, Moody’s Investors Service, 2013).

¹² In an earlier study, we asked investors what concerned them the most about CAC language that appeared to leave room for manipulation by the debtor. A handful said they worried about deeper haircuts and lower recovery values; no one suggested that restructuring would become more likely with that or any other version of CACs. Gelpern et al. ‘If Boilerplate Could Talk: The Work of Standard Terms in Sovereign Bond Contracts’ [2019] *Law & Social Inquiry*.

¹³ For a recent exception, *see* Chuck Fang, Julian Schumacher and Christopher Trebesch, ‘Restructuring Sovereign Bonds: Holdouts, Haircuts and the Effectiveness of CACs’ (Working Paper, June 2019).

deadweight losses, and overall welfare. We expect the welfare effects in this framework to be highly context-specific. The existing literature does not yet allow us to choose which of the eight scenarios obtains in a given sovereign debt crisis, and therefore could not determine the welfare effects of including CACs in particular sovereign bonds. We conclude with research and policy implications.

I. Corporate Debt Ghosts

It is not surprising to find contemporary policy engagement with CACs and workout techniques in sovereign bonds drawing on the corporate debt experience.¹⁴ In contrast, corporate debt contracts and corporate workout experience barely rate a mention in the growing empirical literature on sovereign CACs. Voting in corporate workouts—in and out of bankruptcy—has a rich history full of holdout creditors, manipulative debtors, faithless agents, judicial and regulatory intervention. By comparison, the history of CACs in sovereign bond workouts is recent, thin and bland: just a few dozen restructured bonds and one big courtroom drama (Argentina), where CACs figured in a dubious aside while another clause stole the show.¹⁵ Because we view *ex post* restructuring experience as potentially central for assessing the welfare effects of CACs, we turn to corporate debt for clues to the likely impact of CACs in sovereign workouts. A key lesson from the literature on corporate workouts is that CACs' performance must be judged relative to the available alternatives. In other words, CACs look compelling if the alternative to majority modification is disorderly default and massive deadweight losses. They look inessential and possibly distortive if the debtor can secure the necessary debt relief in bond exchanges with exit consents, targeted domestic legislation, or by majority vote in bankruptcy.

CACs were reportedly introduced in English corporate bonds in 1879 and quickly became corporate market standard in London.¹⁶ At least two other majoritarian coordination mechanisms preceded CACs and operated in parallel with them: bondholder committees and stock exchange rules that shut defaulting debtors out of the London market¹⁷. Both were used in sovereign debt. Weidemaier and Gulati trace the first CAC in a sovereign bond to Czechoslovakia's 1922 issue coordinated with the League of Nations.¹⁸ Flandreau suggests that CACs' added value in sovereign debt would have been uncertain in the late 19th century owing to the challenge of enforcing contracts against absolutely immune debtors, and the ability of bondholder committees and stock exchange rules to achieve acceptable results without CACs.¹⁹ Reinforcing Flandreau's argument, Czechoslovakia did not even consider using its CACs when it had to restructure the 1922 bond many years later.²⁰

¹⁴ See e.g., Lee C. Buchheit and G. Mitu Gulati, 'Exit Consents in Sovereign Bond Exchanges' (2000) 48 UCLA L Rev 59; Lee C. Buchheit and G. Mitu Gulati, 'Sovereign Bonds and the Collective Will' (2004) 51 Emory L J 131.

¹⁵ Moody's, 'The Role of Holdout Creditors and CACs in Sovereign Debt Restructurings' (Sovereign Defaults Series, Moody's Investors Service, 2013); Chuck Fang, Julian Schumacher and Christopher Trebesch, 'Restructuring Sovereign Bonds: Holdouts, Haircuts and the Effectiveness of CACs' (Working Paper, June 2019); *NML Capital Ltd. v. Republic of Argentina*, 699 F.3d 246 (2d Cir. 2012).

¹⁶ Lee C. Buchheit and G. Mitu Gulati, 'Sovereign Bonds and the Collective Will' (2004) 51 Emory L J 131; Antonio Sainz de Vicuña y Barroso, 'Identical Collective Action Clauses for Different Legal Systems: A European Model' in Klaus-Albert Bauer, Andreas Cahn and Patrick S. Kenadjian (eds), *Collective Action Clauses and the Restructuring of Sovereign Debt* (de Gruyter 2013).

¹⁷ Marc Flandreau, 'Sovereign States, Bondholders Committees, and the London Stock Exchange in the Nineteenth Century (1827-68): New Facts and Old Fictions' (2013) 29 Oxford Rev of Economic Policy 668.

¹⁸ Weidemaier and Gulati (n. 1).

¹⁹ Marc Flandreau, 'Sovereign States, Bondholders Committees, and the London Stock Exchange in the Nineteenth Century (1827-68): New Facts and Old Fictions' (2013) 29 Oxford Rev of Economic Policy 668.

²⁰ Weidemaier and Gulati (n. 1).

CACs in U.S. corporate bonds gained popularity in the 1920s as a faster, cheaper alternative to court-supervised equity receiverships²¹. Corporate, municipal, and sovereign bond defaults in the 1920s and the 1930s revealed rampant abuse by bondholder representatives, bankers, and corporate equity holders, and led to the prohibition on majority amendment in publicly-issued, SEC-registered U.S. corporate bonds under the Trust Indenture Act of 1939 (“TIA”). An eight-volume SEC report, compiled under the Securities Exchange Act of 1934 mandate, featured hundreds of pages of examples of bankers taking bribes to do corporate managers’ bidding, and bondholder committees using threats, inducements, and outright lies to recruit bondholders. Vote-buying and selling were rampant. Equity holders and their agents bought up corporate debt, voted it, and effectively expropriated arm’s length creditors.²² Although the authors of the SEC report were keenly aware of the holdout problem,²³ they were more worried about abuse in out-of-court workouts and relaxed about available alternatives. The TIA consciously limited firms’ out-of-court workout options and sought to confine majority rule to the newly enacted corporate bankruptcy reorganization framework. Roe points out that subsequent jurisprudence limited the use of majority amendment even in bankruptcy²⁴; majority rule in bankruptcy remained on shaky footing until the 1978 amendments to the U.S. Bankruptcy Code.²⁵

At about the same time as the SEC was cataloguing corporate restructuring abuses, the League of Nations committee on sovereign debt contracts looked for ways to promote creditor coordination, and even commissioned a survey of statutory and contractual majority amendment mechanisms. The U.S. SEC report on bond workouts contained plenty of misdeeds involving sovereign debt, but did not recommend banning majority modification in sovereign bonds, because it would be quite pointless:

In fashioning these regulatory measures, it will not be possible even to approximate the type of supervision and control which inheres in bankruptcy or receivership courts, since the assets of the debtor are not subject to process in this country and no power exists to subject them to such jurisdiction. By the same token there is no control over the debtor in any real or legalistic sense. Hence any system of control must fall short of assuring, to the degree possible in the domestic field, production of reorganization or readjustment plans which are fair and equitable. As we have said, assets cannot be collected; claims cannot be enforced; debtors cannot be restrained from wasteful or unconscionable practices; leverage cannot be placed in the hands of creditors; priorities of creditors cannot be enforced, as in domestic bankruptcies or receivership.²⁶

The United States was relatively late to ban CACs in corporate debt. Germany had severely limited majority rule under its Debt Securities Act of 1899, which could have inspired (or had shared inspiration with) the

²¹ William W. Bratton and Adam J. Levitin, ‘The New Bond Workouts’ (2018) 166 University of Pennsylvania L Rev 1597.

²² See e.g., Securities and Exchange Commission, Securities and Exchange Commission Report on the Study and Investigation of the Work, Activities, Personnel and Functions of Protective and Reorganization Committees (U.S. Government Printing Office 1936); Securities and Exchange Commission, Securities and Exchange Commission Report on the Study and Investigation of the Work, Activities, Personnel and Functions of Protective and Reorganization Committees (U.S. Government Printing Office 1937); *Aladdin Hotel v. Bloom*, [1953] 200 F.2d 627 (8th Cir.).

²³ “It is clear that the inertia of security holders is great and the difficulty of getting them assembled tremendous.” SEC (1937) (n 14); See also Mark Roe, ‘The Voting Prohibition in Bond Workouts’ (1987) 97 Yale L J 232.

²⁴ Roe, *supra* note 24.

²⁵ Trust Indenture Act of 1939, Sec. 316(b). Each debt holder’s right to receive payment under publicly issued corporate debt securities could not “be impaired or affected without the consent of such holder.”

²⁶ SEC (1937) (n 14), p. 737.

voting prohibition under the TIA²⁷. The Debt Securities Act remained in effect until a replacement law in 2009 law specifically permitted CACs. Debtors and creditors may not have felt the urgency of repeal because, long before the replacement was enacted, German firms had circumvented the law by issuing debt in London, where CACs were permitted²⁸.

The United Kingdom, Canada, Australia, Luxembourg and Japan comprised the small handful of jurisdictions that had never banned CACs²⁹. Throughout the 20th century, most other countries prohibited or severely limited contractual majority amendment of payment terms, much like Germany and the United States. All but the United States have recently repealed the unanimity requirement³⁰. In this fragmented legal regime, some U.S. firms have bonds that include both CACs and unanimity, depending on market custom in the issuance jurisdiction.³¹

The TIA's prohibition on CACs in publicly traded corporate debt has drawn sharp criticism from law scholars, including the seminal contribution by Roe³² as well as a vigorous defense by Brudney,³³ among others. Critics blamed the prohibition for deadweight losses in drawn-out bankruptcy reorganizations that had enjoyed the support of large creditor majorities on the eve of the bankruptcy filing. They also argued that the requirement of unanimous consent did not serve its stated purpose of protecting unsophisticated bondholders, preventing abuse, and distorting incentives. Instead, it encouraged workarounds that were even harsher on dissenting minority investors³⁴. Supporters of the prohibition pointed out that bankruptcy avoidance was often fleeting, illusory, or both: about half the firms ended up in bankruptcy anyway, so that the net result of out-of-court restructurings was to prolong the agony without delivering more relief.³⁵

Out-of-court corporate workouts appear to come in clumps³⁶. They may be responding to background macroeconomic and credit conditions, as well as tax, regulatory, and contract developments. Debt contracts and restructuring practices also respond to legal shocks. Most recently, Bratton and Levitin document a small but clearly discernible shift to majority amendment in U.S. corporate bonds exempt from SEC

²⁷ See Jason Grant Allen, 'More Than a Matter of Trust: The German Debt Securities Act 2009 in International Perspective' (2011) 7 Capital Markets L J 55.

²⁸ Jason Grant Allen, 'More Than a Matter of Trust: The German Debt Securities Act 2009 in International Perspective' (2011) 7 Capital Markets L J 55.

²⁹ Jason Grant Allen, 'More Than a Matter of Trust: The German Debt Securities Act 2009 in International Perspective' (2011) 7 Capital Markets L J 55; Sonke Haseler, 'Collective Action Clauses in International Sovereign Bond Contract – Whence the Opposition?' (2009) 23 J of Economic Surveys 882.

³⁰ Jason Grant Allen, 'More Than a Matter of Trust: The German Debt Securities Act 2009 in International Perspective' (2011) 7 Capital Markets L J 55; Sonke Haseler, 'Collective Action Clauses in International Sovereign Bond Contract – Whence the Opposition?' (2009) 23 J of Economic Surveys 882; Carlos Berdejo, 'Collective Action Clauses & Corporate Bond Spreads: Evidence from Chile' (2016) 36 Northwestern J of Intl L & Business 469.

³¹ For example, Fiat Chrysler has issued debt securities [in the United States under a qualified New York-law indenture with unanimity](#), but also [in Europe under English law](#), using majority amendment CACs.

³² Mark Roe, 'The Voting Prohibition in Bond Workouts' (1987) 97 Yale L J 232.

³³ Victor Brudney, 'Corporate Bondholders and Debtor Opportunism: In Bad Times and Good,' (1992) 105 Harvard Law Review 1821.

³⁴ Mark Roe, 'The Voting Prohibition in Bond Workouts' (1987) 97 Yale L J 232.

³⁵ For an overview of the debate, see Bratton and Levitin (n. 22).

³⁶ See e.g., Edward I. Altman and Brenda Karlin, 'The Re-Emergence of Distressed Exchanges in Corporate Restructurings' (2009) 5 J of Credit Risk 43.

registration requirements, adapting to the aftermath of a Federal Court ruling in New York that briefly cast doubt on the enforceability of exit consents.³⁷

This latest corporate experience casts doubt on the urgency of banning or promoting CACs against the background of credible alternative workout paths. CACs have not been the only, nor necessarily the best means of addressing corporate debt overhang. Debt exchanges, even clearly coercive ones (discussed below), delivered debt reduction and survived court challenges for decades.³⁸ Corporate restructuring practices have evolved to reflect contractual, regulatory, and statutory constraints, as have their sovereign counterparts³⁹.

Multi-creditor corporate debt contracts can be restructured in three ways, broadly defined: using contractual majority amendment terms such as CACs to bind dissenters, with debt exchanges (using exit consents to penalize dissenters), and in bankruptcy or a bankruptcy-style collective restructuring under judicial supervision. The first two approaches predate robust corporate bankruptcy reorganization statutes. In the United States, the corporate debtor must choose between bankruptcy and a debt exchange. Debtors may use CACs or debt exchanges in a targeted way to postpone debt payments and conserve liquidity, or for a more fundamental restructuring as a way to avoid what they perceive as deadweight losses in bankruptcy.⁴⁰

In a debt exchange, creditors trade in their debt claims for new ones that relieve the firm's debt burden. Debt exchanges rely on a combination of sticks and carrots to get enough relief and dissuade free-riders. Exit amendments (also called exit consents) are sticks, widely used to achieve high participation and dissuade potential holdouts. When the debtor invites existing creditors to trade their old debt securities for new ones, it also asks (and sometimes requires) them to vote to amend the residual debt, leaving behind illiquid or effectively subordinated securities, even where core payment terms remain unchanged. Debtors may prefer debt exchanges to CACs when they worry about clearing the amendment threshold. Recent research suggests that debt exchanges may be associated with deeper debt relief for the firm, partly because it does not have to pay everyone the same.⁴¹ Others observe that the efficiency of any given approach depends on who holds the debt, so that widely held public bond issues should benefit the most from bankruptcy's strong coordination framework.

Corporate restructuring history suggests that the risk of insider abuse and opportunistic behavior by debtors is real—with jurisprudence to prove it.⁴² A customary response is that sovereign debtors would not

³⁷ William W. Bratton and Adam J. Levitin, 'The New Bond Workouts' (2018) 166 *University of Pennsylvania L Rev* 1597.

³⁸ See e.g., *Katz v. Oak Industries*, [1986] 508 A.2d 873 (Del. Ch.) (coercive exit consents), *Kass v. Eastern Air Lines, Inc.*, 1986 WL 13008 (Del. Ch.) (paying for votes), 28. *Marblegate Asset Mgmt., LLC v. Education Mgmt. Finance Corp.*, [2017] 846 F.3d 1 (2nd Cir.) (expropriating holdouts). For UK parallels, see *Assenagon Asset Mgmt S.A. v. Irish Bank Resolution Co.* [2012] EWHC 2090 (Ch), HC11C01320 (coercion/expropriation); *Azevedo v. Imcopa Importacao* [2014] B.C.C. 611 (paying for votes).

³⁹ Compare Ran Bi, Marcos Chamon and Jeromin Zettelmeyer, 'The Problem That Wasn't: Coordination Failures in Sovereign Debt Restructurings' (2016) 64 *IMF Economic Rev* 471.

⁴⁰ Some of this practice is attributable to regulation: for instance, although the TIA does not apply to exempt securities in the United States, many firms give their creditors the option to exchange exempt securities for publicly tradable ones, and try to keep the covenants parallel. William Bratton, 'The New Bond Workouts' (2018) 166 *University of Pennsylvania L Rev* 1597.

⁴¹ Ulrich Hege, 'Bond Exchange Offers or Collective Action Clauses?' (TSE Working Papers 19-1016, Toulouse School of Economics 2019); compare Ran Bi, 'The Problem That Wasn't: Coordination Failures in Sovereign Debt Restructurings' (2016) 64 *IMF Economic Rev* 471.

⁴² See, e.g., Lachlan Burn, 'Bondholder Resolutions in the Courtroom,' in Klaus-Albert Bauer, Andreas Cahn and Patrick S. Kenadjian (eds), *Collective Action Clauses and the Restructuring of Sovereign Debt* (de Gruyter 2013)

perpetrate insider abuse because they do not issue equity; however, such reasoning is misleading. There are plenty of insiders and quasi-insiders in sovereign debt, ranging from government agencies to regulated financial institutions, which could all benefit from colluding with the sovereign to expropriate creditor minorities. On the other hand, sovereigns have to worry more about the spillover effects of default and restructuring on their domestic economies.⁴³

In contrast to the large volume of empirical studies of CACs in sovereign debt, there appear to be hardly any studies comparing restructuring outcomes or prices between corporate bonds with and without CACs.⁴⁴ This is surprising in light of the preceding discussion: the corporate bond universe is bigger than its sovereign counterpart; CACs originated in corporate debt more or less organically; corporate bonds use a richer variety of bond covenants than sovereign debt, and contractual workouts are far more common. Meanwhile, only about a dozen sovereign restructurings used CACs in modern memory⁴⁵. Corporate bond history includes legislative, regulatory, and judicial prohibition, side by side with encouragement of CACs by government actors. This messy, noisy history of CACs in corporate debt, and the almost century-long debate on their merits, open the possibility that the welfare effects of CACs are ambiguous. They may facilitate debt restructuring among large numbers of diverse, dispersed creditors, but they are not the only way to achieve the result outside bankruptcy, nor clearly the best way in light of the available alternatives.

II. The Place of Price

Quantitative empirical research has followed CAC advocacy: studies responded to demand from policy makers, and broadly reflected policy imperatives. Policy makers who promoted CACs and debt managers who adopted them have professed a keen interest in how CACs would affect borrowing costs, but did not leave themselves much room for maneuver if it turned out that CACs were associated with large pricing penalties, in line with dire warnings by industry opponents. In private, more than a few officials said they had expected CACs to come at a discernible cost, and were surprised to find none.

Had academic studies early on linked CACs to substantial penalties, supporters might have stood down or faced demands to defray the cost of what was, in effect, systemic crisis insurance. Two decades of academic studies produced stubbornly inconclusive, even inconsistent, results⁴⁶. Market consensus meanwhile settled around the view that CACs did not raise sovereign borrowing costs, but that price differences between bonds with and without CACs might occasionally appear when default was imminent. This outcome might have been theoretically awkward if read to suggest that investors were not forward-looking, but it was also pragmatically ideal: small, uncertain price effects left advocates free to insist that CACs were costless (“market-neutral”) – at worst, harmless – but stopped short of driving away those who saw in them potential for more orderly process, market discipline, burden-sharing, or all of the above.

(UK); William W. Bratton and Adam J. Levitin, ‘The New Bond Workouts’ (2018) 166 *University of Pennsylvania L Rev* 1597 (US).

⁴³ Fernando Broner, Alberto Martin and Jaume Ventura, ‘Sovereign Risk and Secondary Markets’ (2010) 100 *American Economic Review* 1523.

⁴⁴ Carlos Berdejo, ‘Collective Action Clauses & Corporate Bond Spreads: Evidence from Chile’ (2016) 36 *Northwestern J of Intl L & Business* 469.

⁴⁵ Chuck Fang, Julian Schumacher and Christopher Trebesch, ‘Restructuring Sovereign Bonds: Holdouts, Haircuts and the Effectiveness of CACs’ (Working Paper, June 2019).

⁴⁶ See, e.g., the literature review in Elena Carletti, Paolo Colla, G. Mitu Gulati and Steven Ongena, ‘The Price of Law: The Case of the Eurozone Collective Action Clauses’ (Working Paper, 16 February 2019) <<https://ssrn.com/abstract=2817041>> accessed July 1, 2019.

Contemporary CAC initiatives and the associated empirical literature have, on the one hand, paid much attention to the price of CACs and their impact on borrowing costs, and on the other hand, have boxed themselves into promoting CACs come what may. Both may have gone too far. First, on purely theoretical grounds, CACs may or may not be a good idea, in the sense that they could be either welfare reducing or welfare improving. Second, the empirical pricing literature offers limited insight on whether CACs are a good idea: while falling costs could indicate a rise in welfare or unchanged welfare, rising costs could be consistent with a rise in welfare, a fall in welfare, or unchanged welfare. Distinguishing among these cases would require an empirical analysis of the ex-post implications of CACs, rather than a pricing analysis. Such analysis is only beginning to emerge ⁴⁷.

Making this argument rigorously would require a formal model ⁴⁸, but the main idea is easily sketched. The central insight is that the price effects of CACs can come from several mechanisms, some of which are good for welfare, some of which are bad because they create moral hazard, and some of which are welfare neutral because they are confined to distribution between creditors and debtors. Consider a set-up in which CACs change the ex-post outcomes of debt restructurings in two ways. By reducing the extent to which holdouts can interfere with a restructuring that brings about debt sustainability, they could reduce litigation costs and the duration of debt workouts, and hence the “deadweight losses” of restructuring. Ex post, both creditors (other than holdouts) and the debtor benefit from this presumed effect, which is the dominant stated reason why CACs are so popular with policy makers working on sovereign debt. In addition, CACs could affect the bargaining power of the debtor, and hence the “haircut” suffered by the creditors. This effect is usually presumed to benefit the debtor. But this is not necessarily the case. The predominant alternative to CACs is a debt exchange offer with or without exit consents, and the threat of default in the background.⁴⁹ When armed with exit consents – or simply with defiance fortified by immunity – a sovereign debtor might use exchange offers to extract better terms from most creditors than would obtain with amendment using CACs, perhaps settling with holdouts on the side ⁵⁰. Hence, the bargaining power effect could go either way, depending on expected litigation costs, creditor composition⁵¹, and the debtor’s propensity to act opportunistically.

Table 1 combines these channels through which CACs might affect debt restructuring outcomes with two assumptions about debtor behavior. In the top row, the probability of default is assumed to be insensitive to the effect of CACs on the consequences of default. In the bottom row, debt restructuring outcomes are assumed to influence the probability of default through the mechanisms described in the previous

⁴⁷ See, e.g., Chuck Fang, Julian Schumacher and Christopher Trebesch, ‘Restructuring Sovereign Bonds: Holdouts, Haircuts and the Effectiveness of CACs’ (Working Paper, June 2019).

⁴⁸ For example, along the lines of Elena Carletti, Paolo Colla, G. Mitu Gulati and Steven Ongena, ‘The Price of Law: The Case of the Eurozone Collective Action Clauses’ (Working Paper, 16 February 2019) <<https://ssrn.com/abstract=2817041>> accessed July 1, 2019.

⁴⁹ In Europe and other jurisdictions where most of the debt is governed by the borrower’s own law, the sovereign has another alternative—using the “local law advantage” to effect modification by statute or regulation. Mark Weidemaier, ‘Restructuring Italian (or Other Euro Area) Debt: Do Euro CACs Constrain or Expand the Options?’ (2 April 2019) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3364982> accessed 16 July 2019; Yannis Manuelides, ‘Using the Local Law Advantage in Today’s Eurozone’ (17 June 2019) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3405422> accessed 1 July 2019.

⁵⁰ Bi, Chamon, and Zettelmeyer, ‘The Problem That Wasn’t: Coordination Failures in Sovereign Debt Restructurings’ (2016) 64 IMF Economic Rev 471.

⁵¹ See Robert Scott, Mitu Gulati and Stephen J. Choi, ‘Hidden Holdouts: Contract Arbitrageurs and the Pricing of Collective Rights’ (NYU/Penn Conference on Law and Finance conference, New York City, February 2019) <www.law.nyu.edu/sites/default/files/Hidden%20Holdouts%20NYU-Penn%20Conference_1.9.2019.pdf> accessed 2 July 2019

paragraph, i.e. by changing the incentives to prevent and/or to default opportunistically. The columns describe four possible combinations of the effects of CACs on debtor bargaining power (up or down; equivalent to saying that haircuts rise or fall) and deadweight losses of default (down or unchanged). The cells of the matrix, finally, describe the implications of each case for borrowing costs r – assumed to depend on the impact of CACs on both loss-given-default (lgd) from the creditor perspective and the probability of default (pd) – and for welfare.

Table 1. Effects of CACs on bond yields and welfare

			Effect of CACs on debt restructuring			
			No impact on deadweight losses		Deadweight losses reduced	
			debtor bargaining power up	debtor bargaining power down	debtor bargaining power up	debtor bargaining power down
			(1)	(2)	(3)	(4)
Debtor behavior	(1) pd does not react to CACs		r up W neutral	r down W neutral	r ambiguous W improving	r down W improving
	(2) pd reacts to CACs		r up W reducing	r down W improving	r ambiguous W ambiguous, but falling/unchanged r is sufficient for rise in W	r ambiguous W ambiguous, but falling/unchanged r is sufficient for rise in W

Note: pd refers to the probability of default, r to the real return required by creditors (the borrowing cost from the perspective of the debtor), and W to welfare. “Debtor bargaining power up” corresponds to a rise in the haircut, “debtor bargaining power down” to a fall. The loss-given-default (lgd) suffered by creditors reflects both the haircut and the deadweight loss of default. r depends on both lgd and pd .

Consider the first row, which assumes that the probability of default is unchanged by the impact of CACs on debt restructuring outcomes. This could be because the debtor is not forward-looking, or simply because “ability to pay” considerations swamp any other possible determinants of the decision to restructure debt). This case is useful both for its practical relevance and as a benchmark that makes it easier to think about the implications of the alternative assumption, in which the debtor takes the consequences of CACs on debt restructuring outcomes into account (row 2).

The immediate implications of the assumption that the probability of default does not react to CACs are as follows.

- Since pd is unchanged, r will change only in response to changes in lgd , the loss-given-default suffered by the creditor. This in turn responds to changes in debtor bargaining power (higher debtor bargaining power means a higher haircut, hence a higher lgd) and in the deadweight loss of default (for a given debtor bargaining power, a lower deadweight loss means a lower lgd). In cells (1,1), (1,2) and (1,4), these go in the same directions, i.e. lgd and r unambiguously rise (cell 1,1) or fall (cells 1,2 and 1,4). In cell (1,3), the impact of CACs on lgd and r is ambiguous, however, since debtor bargaining power rises – raising haircuts – while deadweight losses fall.
- The assumption that pd is unchanged rules out any debtor moral hazard effect. Hence, welfare can only increase – if the deadweight loss of default declines (cells 1,3 and 1,4) – or stay unchanged (cells 1,1 and 1,2).

The second row assumes that the debtor takes the outcomes of debt restructuring into account when deciding how much to invest in crisis prevention and/or whether to default opportunistically. An increase in haircuts and a reduction of the deadweight losses of default will tend to increase the probability of default through either of these channels. Since this comes at the expense of the creditor, these are forms of debtor moral hazard. Importantly, however, the welfare effect of a reduction in the deadweight losses of debt restructuring – that is, the efficiency gain *ex post* – could be positive overall, even if it leads to debtor moral hazard, but only if the increase in the probability of default is not too high.

Armed with these insights, consider how the results of the first row are modified by the assumption that the debtor is forward-looking (that is, takes restructuring outcomes with CACs into account):

- Cell (2,1): CACs raise the haircut but do not impact deadweight losses. This raises the probability of default at the expense of creditors (debtor moral hazard). With both *lgd* and *pd* up, yields and sovereign borrowing costs rise. Since welfare was neutral in (1,1) it must now fall. The welfare cost is ultimately borne by the debtor, in the form of the greater increase in borrowing cost attributable to the increase in *pd*.⁵²
- Cell (2,2): CACs do not impact deadweight losses, but *lower* haircuts – perhaps because they are bundled with new safeguards elsewhere in the contract, or because they encourage holdout behavior. This makes debt restructurings less attractive to the debtor, lowering debtor moral hazard, so that *pd* declines. With both *lgd* and *pd* down, borrowing costs fall. Welfare rises.
- Cell (2,3): CACs are assumed to both lower deadweight losses and raise haircuts. For both reasons, debt restructurings become more attractive to the debtor, and *pd* increases. Lower deadweight losses and higher haircuts pull *lgd* in different directions, so the net effect is unclear. The impact on borrowing costs is also unclear: if *lgd* increases, costs would increase, but if *lgd* falls and *pd* does not increase to offset it, costs might fall. The welfare implications are ambiguous: they depend on the relative magnitudes of the fall in deadweight losses, the increase in haircuts and the extent to which *pd* reacts. This said, if *r* falls or is unchanged, this would imply a welfare improvement, since the debtor is better off both *ex ante* (lower borrowing costs) and *ex post* (lower deadweight costs of default). Even a small increase in *r* could be consistent with a welfare improvement: the *ex post* efficiency gain associated with lower deadweight costs of default may outweigh the moral hazard effect.
- Cell (2,4): CACs are assumed to lower both deadweight losses and haircuts. Hence, *lgd* unambiguously falls, but *pd* might fall or rise, depending on whether the debtor reacts more to lower deadweight losses (which make a debt restructuring more attractive) or to the lower haircuts (which make a debt restructuring less attractive). Since the rise in *pd* could offset the fall in *lgd*, the impact on borrowing costs is ambiguous. The impact on welfare is more likely to be positive than in cell (2,3), since *pd* will rise less (if at all) due to the lower haircut. But it is still ambiguous: if there is a large rise in *pd*, the rise in moral hazard might outweigh the lower deadweight loss of default, and welfare might fall. As in cell (2,3), a fall in *r* implies a welfare improvement.⁵³

⁵² Put differently, if the debtor could commit not to raise *pd*, i.e. to be in cell (1,1) rather than cell (2,1), it would.

⁵³ The Carletti and co-authors' model can be viewed as a special case of this matrix. Elena Carletti, Paolo Colla, G. Mitu Gulati and Steven Ongena, 'The Price of Law: The Case of the Eurozone Collective Action Clauses' (Working Paper, 16 February 2019) <<https://ssrn.com/abstract=2817041>> accessed July 1, 2019. The authors assume that (1) unlike non-CAC bonds, bond with CACs can be restructured without any output costs (corresponding to the last two columns of Table 1); (2) default/restructuring costs influence the restructuring decision (as in the bottom row of Table 1). They also assume that the haircut on non-CAC bonds is either zero (full repayment) or 100 percent (default, triggering an output cost). Their main result is that depending on the size of the output shock, either cell

The relationship between changes in borrowing costs and changes in welfare can hence be summarized as follows:

- Suppose borrowing costs rise. This may be consistent with lower welfare due to debtor moral hazard (cell 2,1), unchanged welfare (reflecting higher haircuts but no effect on pd , cell 1,1), or even with higher welfare (cells 2,3 and 2,4). The interpretation of the higher welfare case is as follows: while the probability of default rises, it does so for efficient reasons, namely, because CACs lower the deadweight costs of defaults by a lot; while moral hazard either declines or rises, but not by much.
- Suppose borrowing costs fall. This could be consistent with higher welfare, due to either lower deadweight losses with unchanged moral hazard (cell 1,4), lower deadweight losses that offset somewhat higher moral hazard (cell 2,3 or cell 2,4 with small rise in pd), lower moral hazard with unchanged deadweight losses (cell 2,2) or both lower moral hazard and lower deadweight losses (cell 2,4 with fall in pd). However, welfare could also be unchanged, as the reduction in borrowing costs might merely reflect a lower haircut, without changes in either the pd or the deadweight loss of default (cell 2,2). Importantly, however, welfare cannot fall.

The bottom line is that the reaction of borrowing costs to CACs does not offer a reliable guide to the welfare implications of CACs, with one important exception: if borrowing costs stay unchanged or fall, then CACs are either welfare improving or welfare neutral. Distinguishing between these cases – or establishing the welfare implications of CACs if they were found to raise borrowing costs—would require empirical work on the ex-post effects of CACs: in particular, on how they influence haircuts, and whether and to what extent they lower the deadweight losses of defaults.

Conclusions

CACs in sovereign debt use market form with roots in corporate debt to achieve policy outcomes. The experience with CACs in corporate debt suggests that their welfare effects are uncertain ex ante, and change over time. CACs in any given sovereign debt contract can be good or bad, importantly depending on the efficacy of other restructuring mechanisms available to the debtor and its creditors. Other factors that can affect CACs' impact on welfare include the debtor's propensity to default opportunistically and creditor composition (relevant to deadweight losses).

While it makes sense to consider the impact of CACs on sovereign borrowing costs as part of the broader cost-benefit calculus associated with adoption, pricing studies deliver an unambiguous welfare implication only if they find that CACs do not raise borrowing costs. Moreover, the impact of CACs on sovereign borrowing costs depends on factors that have not received enough attention in the existing literature. Going forward, research on the *ex post* effects of CACs in sovereign and corporate bonds, particularly as compared to other creditor coordination and workout mechanisms, would be particularly valuable. The impact of creditor composition on the operation of CACs,⁵⁴ as well as the impact of CACs on reducing deadweight

(2,3) or cell (2,4) will be relevant. For smaller output shocks, CAC bonds are restructured while non-CAC bonds escape restructuring (as this would trigger an output loss). But for larger output shocks, CAC bonds are restructured and there is total default on non-CAC bonds. They find that CAC bonds entail lower borrowing costs than non-CAC bonds, consistent with either cell (2,4) or cell (2,3) for the case in which moral hazard effects are small. Erce et al. (2019) reach a similar conclusion.

⁵⁴Robert E. Scott, Mitu Gulati and Stephen J. Choi, 'Hidden Holdouts: Contract Arbitrageurs and the Pricing of Collective Rights' (10 January 2019). Columbia Law and Economics Working Paper No. 586; NYU Law and Economics Research Paper No. 18-27; Duke Law School Public Law & Legal Theory Series No. 2018-51. Available at SSRN: <https://ssrn.com/abstract=3203949>.

costs in restructuring, would be important for policy formulation. Because there are at least three different model CACs and considerable variation among issuers within each model, identifying the impact of CACs on restructuring is not straightforward. Where first-wave CACs barely move the dial, third-wave CACs eliminate the possibility of holdouts altogether, but add safeguards to against debtor and insider abuse⁵⁵.

Our argument implies that policy makers working on Europe's financial architecture may wish to calibrate the emphasis on CACs as a crisis-fighting tool, and on pricing studies as tools of persuasion. Study results so far remain "all over the map," which is unsurprising in our stylized scheme given the diversity of factors at play, including the availability of other workout and creditor coordination tools, and the challenge of identifying the relevant factors in any given case.

When a house is on fire, well-functioning doors—and doorknobs—could save lives. However, keeping doorknobs in good working order does not amount to a fire prevention strategy, or even an emergency management plan. By the same token, a resilient financial architecture for Europe cannot be made to depend on CACs, and must go well beyond them. In a well-conceived and well-executed architectural plan, CACs would take up their proper ancillary role and yield public space to loftier endeavors.

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⁵⁵ Chuck Fang, Julian Schumacher and Christopher Trebesch, 'Restructuring Sovereign Bonds: Holdouts, Haircuts and the Effectiveness of CACs' (Working Paper, June 2019).

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